



Declared Plant Policy

This policy relates to natural resources management under section 9(1)(d) of the Landscape South Australia Act 2019 (the Act), enabling co-ordinated implementation and promotion of sound management programs and practices for the use, development or protection of natural resources of the State. Specifically, this policy provides guidance on the use and management of natural resources relating to the prevention or control of impacts caused by pest species of plants that may have an adverse effect on the environment, primary production or the community, as per object s7(1)(f) of the Act.

bifora (*Bifora testiculata*)

Bifora is a winter-growing annual weed of broadacre crops where it is significant as a seed contaminant, and has a limited distribution in South Australia.

Management Plan for Bifora

Outcomes

- Minimise losses to cereal and field pea production from bifora.

Objectives

- Prevent further spread of bifora between properties as a seed contaminant.

Best Practice Implementation

- Regional landscape boards and Green Adelaide to prevent movement of contaminated seed as detected.
- Where declared for control under section 192(2), regional Landscape boards to ensure high priority infestations are controlled in accordance with regional management plans.

Regional Implementation

Refer to regional management plans for further details.

Region	Actions
Alinytjara Wilurara	Limited action
Eyre Peninsula	Contain spread
Green Adelaide	Monitor
Hills and Fleurieu	Monitor – assess impacts
Kangaroo Island	Monitor
Limestone Coast	Prevent entry or sale (Regional alert)
Murraylands and Riverland	Limited action
Northern and Yorke	Limited action
South Australian Arid Lands	Limited action

Declaration

To implement this policy, bifora is declared under the *Landscape South Australia Act 2019* throughout the whole of the State of South Australia to prevent further spread via contaminated seed or other produce. Its entry to South Australia, movement or transport on a public road by itself or as a contaminant, or sale by itself or as a contaminant are prohibited.

The Eyre Peninsula Landscape Board may require land owners to control bifora plants growing on their land, and is required to control plants on road reserves in the region.

Bifora is declared in category 3 under the Act for the purpose of setting maximum penalties and for other purposes. Any permit to allow its entry to the State, road transport or sale can only be issued by the regional landscape board or Green Adelaide pursuant to section 197.

Under the *Landscape South Australia (General) Regulations 2020*, Regulation 27 specifies the conditions under which a person is exempt from the operation of section 186 and may transport wool, grain or other produce or goods carrying bifora on public roads, or bring them into the State. Regulation 28 specifies conditions under which a person is exempt from the operation of section 188(2) and may sell wool, grain or other produce or goods carrying bifora. Note that certain produce or goods may be excluded from these general movement and sale exemptions by Gazettal Notice of the Chief Executive of the Department for Environment and Water.

The following sections of the Act apply to bifora throughout each of the regions noted below:

Sections of Act	Region								
	AW	EP	GA	HF	KI	LC	MR	NY	SAAL
186(1) Prohibiting entry to area	X	X	X	X	X	X	X	X	X
186(2) Prohibiting movement on public roads	X	X	X	X	X	X	X	X	X
188(1) Prohibiting sale of the plant	X	X	X	X	X	X	X	X	X
188(2) Prohibiting sale of contaminated goods	X	X	X	X	X	X	X	X	X
190 Requiring notification of presence									
192(1) Land owners to destroy the plant on their properties									
192(2) Land owners to control the plant on their properties		X							
194 Recovery of control costs on adjoining road reserves									

Review

This policy is to be reviewed by 2025, or in the event of a change in one or more regional management plans for bifora.

Weed Risk

Invasiveness

Bifora is an annual and is spread primarily as a contaminant in seed for sowing. It can also move in contaminated hay and on machinery or livestock. Due to its high seed production per unit area, rates of increase can be very high.

Impacts

Bifora competes with cereals, grain legumes and field peas, reducing yields. It is also a contaminant reducing value and marketability of seed and hay. It therefore increases crop input costs and can limit the options for crop rotations even precluding the use of legumes.

Potential distribution

There is little information about the ecological limits of bifora, which is native to the Mediterranean climate zone of southern Europe to about 44°N. It is most abundant on heavier soils with over 400 mm annual rainfall. Experience has shown it to be favoured by frequent cropping, implying that it takes advantage of annual soil disturbance but the seed may not persist so well in the ground under pasture.

Feasibility of Containment

Control costs

Effective herbicide treatments exist for bifora in cereals, with mixtures containing carfentrazone-ethyl giving the most reliable control. Control in pulse crops is more difficult, and there is no cost-effective control in field peas.

Persistence

Bifora forms a significant seed bank in the soil as only about 25% of seed germinates in the first year; it will remain dormant if left on the soil surface, and has staggered germination within one season. Germination is increased by cold stratification over winter, but it has a short growing season and can produce seed even when germinating late within the crop. Experience has shown it to be favoured by frequent cropping, implying that it takes advantage of annual soil disturbance, but the seed may not persist so well in the ground under pasture.

Current distribution

Bifora is scattered on Eyre Peninsula and in the Lower Flinders area, with infestations more common in the Mid North and on Yorke Peninsula.

State Level Risk Assessment

Assessment using the Biosecurity SA Weed Risk Management System gave the following comparative weed risk and feasibility of containment scores by land use:

Land use	Weed Risk	Feasibility of control	Response at State Level
Crop/pasture rotation	low 22	medium 36	limited action
Vegetables	low 22	high 23	monitor

Considerations

Bifora became a significant weed in cereal crops during the late 20th century due to changes in rotations toward more frequent cropping, and regular use of herbicides that reduced other broadleaf weeds.

Risk assessment indicates protect sites as the management action; this is implemented by containing spread through the prohibition on movement and sale. In the Eyre Peninsula region, control may be enforced. Limited action is required in the Murraylands and Riverland region as it has widespread distribution and changes in agronomic practices provide adequate control. As bifora is not a threat to lands outside the rotational cropping zone, only limited action is needed in the Alinytjara Wilurara and South Australian Arid Lands.

Synonymy

Bifora testiculata (L.) Roth, Enum. Pl. Phan. Germ. 1: 888 (1827)

Basionym:

Coriandrum testiculatum L., Sp. Pl. 1: 256. (1753).

Nomenclatural synonyms:

Anidrum testiculatum (L.) Kuntze, Revis. Gen. Pl. 1: 264. (1891).

Atrema testiculatum (L.) Miq., Fl. Ned. Ind. 1(1): 744. (1856).

Taxonomic synonyms:

Bifora dicocca Hoffm., Gen. Pl. Umbell., ed. 2. 192 (1816)

Bifora flosculosa M.Bieb., Fl. Taur.-Caucas. 3: 234 (1820)

Coriandrum didymum Stokes, Bot. Mat. Med. 2: 121 (1812)

Other common names include carrot weed, bird's eye and European bishop.

References

Black, I. D., Mayfield, A. & Matic, R. (1994) Chemical control of bedstraw (*Galium tricornerutum* Dandy) and bifora (*Bifora testiculata* L.) in wheat, barley and field peas. *Plant Protection Quarterly* 9: 24-27.

Hon David Speirs MP

Minister for Environment and Water

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